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THE

NEW-YORK LIFE

INSURANCE COMPANY

PRACTICAL SUGGESTIONS

TO

MEDICAL EXAMINERS

May 19, 1897.

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PRACTICAL

SUGGESTIONS

TO THE

Medical Examiners

OF THE

NEW-YORK LIFE

INSURANCE COMPANY.

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No. 1,029. Ed. 1890.

SPECIAL NOTICE.

IF, after any examination, the Medical Examiner decides to report adversely upon the case, he is requested, before he sends his examination to the Company or Manager, or delivers it to the Agent, to write the Company confidentially, giving the Name, Date of Birth, and Occupation and Residence of the Applicant, together with the reason for his unfavorable opinion; and blanks for such cases are sent every Medical Examiner with this pamphlet.

If, for any reason, the Medical Examiner prefers to do so, he is authorized and requested to send his reports direct to the Home Office; nor is it necessary that he should report or disclose to any one the result of his examination.

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TO THE

MEDICAL EXAMINERS

OF THE

NEW-YORK LIFE

INSURANCE COMPANY.

THE following remarks are offered, not as Medical Instructions, but rather as Practical Suggestions to those among our Examiners who are not familiar with making examinations for Life Insurance.

They are not intended to prescribe in full the duties of Medical Examiners, but to point out the manner in which examinations may be most readily and effectively made. They should be regarded as a confidential communication from the Medical Department of the Company to each Examiner personally.

In return, our Examiners are requested to communicate directly and confidentially with the Medical Department at the Home Office

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of the Company, at any time and in all cases where, in their opinion, it is desirable or necessary.

Any information from them in regard to the Climate, Epidemics, Hygiene, or diseases peculiar to the localities in which they reside, will be welcome and highly appreciated.

LIFE INSURANCE.—THE APPLICANT.

Life Insurance is protection. It protects those dependent upon the insured from the financial loss involved in his untimely death; it relieves him from the pecuniary responsibility connected with the great uncertainty of human life by transferring that responsibility to the company in which he insures.

The business of Life Insurance is based on the fact that, while the longevity of a single individual is proverbially uncertain, there is a fixed law determining, within narrow limits, the average age at death of large numbers of individuals of the same age; and that, under this law, it may be expected that any man in sound health, of temperate habits, with a good family history, and a healthful occupation, will live as long as the average of those of the same age, *i. e.*, will live out his "Expectation of Life."

Involving, as it does, the purely medical questions of the past and present health, the family history, the habits, hygienic surroundings and occupation of the individual, the Life Insurance business requires for its successful prosecution the assistance of those whose lives are spent in the study of such questions—Medical Practitioners; and because of the enormous sums of money involved, and the dangers of fraud, it is necessary that the Medical Examiners of a Life Insurance company should possess, besides a good medical knowledge, the most upright character and sound judgment.

The chief essential to the success of a Life Insurance company is the maintenance of a high standard in the selection of its risks. These should always be fully up to the average in health, of temperate habits, of good personal and family history, and of healthful occupation; and they should approximate closely to the average physical conformation of healthy men. Of the health, habits, history and occupation of an Applicant for insurance, physicians are able to fully inform themselves; but the questions of average physical conformation or "build," and of the average probable longevity of an individual, so rarely present themselves for their attention that the following tables will be found of convenience for reference.

THE BUILD

of an individual (his height and weight) aids to determine his longevity, and it has been found that, other things being equal, his "Expectation of Life" is increased the nearer an individual approaches to the average proportions of height and weight, as they are given below:

A MAN

5	feet	**0**	inches	in height	should	weigh	**115**	pounds.
5	"	**1**	"	"	"	"	**120**	"
5	"	**2**	"	"	"	"	**125**	"
5	"	**3**	"	"	"	"	**130**	"
5	"	**4**	"	"	"	"	**135**	"
5	"	**5**	"	"	"	"	**140**	"
5	"	**6**	"	"	"	"	**145**	"
5	"	**7**	"	"	"	"	**150**	"
5	"	**8**	"	"	"	"	**155**	"
5	"	**9**	"	"	"	"	**160**	"
5	"	**10**	"	"	"	"	**165**	"
5	"	**11**	"	"	"	"	**170**	"
6	"	**0**	"	"	"	"	**175**	"
6	"	**1**	"	"	"	"	**180**	"
6	"	**2**	"	"	"	"	**185**	"
6	"	**3**	"	"	"	"	**190**	"

A considerable variation from these averages (as much as 20 per cent.) is not, however, incompatible with an average "Expectation of Life."

The following is the table of

THE EXPECTATION OF LIFE.

A MAN

20	years	old	may be	expected	to live	**42**	years	or until	**62**	years	old.
25	"	"	"	"	"	**39**	"	"	**64**	"	"
30	"	"	"	"	"	**35**	"	"	**65**	"	"
35	"	"	"	"	"	**32**	"	"	**67**	"	"
40	"	"	"	"	"	**28**	"	"	**68**	"	"
45	"	"	"	"	"	**24**	"	"	**69**	"	"
50	"	"	"	"	"	**21**	"	"	**71**	"	"
55	"	"	"	"	"	**17**	"	"	**72**	"	"
60	"	"	"	"	"	**14**	"	"	**74**	"	"

The foregoing tables are given, not as arbitrary standards, but only to enable the Medical Examiners of the Company to GAUGE and RATE, from a Life Insurance stand-point, the risks which they examine.

MEDICAL EXAMINERS.

The Medical Examiners are selected solely for their moral and professional standing in the communities in which they reside. They hold their appointments direct from the Company, and retain their positions as long as their services prove satisfactory to it.

They are the trusted advisers of the Company, and their relations with the Medical Department are personal and confidential. It is their duty to examine every Applicant for insurance presented to them by the Agents of the Company, to furnish, on blanks provided for that purpose, full and complete reports of the personal and family histories, and of the physical condition of the Applicants, and to give their opinion as to the value of the risks. For each of these examinations they receive a fixed fee, and this fee is paid whether the Applicant is approved or disapproved by the Examiner. The fees are paid by the Company and not by the Applicants or Agents; and the Examiners are in no sense dependent, for their appointment, dismissal, or their fees, upon either Applicants or Agents.

It is to the interest of all concerned that the relations of the Examiner toward both the Applicants and Agents should be cordial and friendly. Toward the Applicants for Insurance his position is of the same delicate and confidential character as that toward the patients who entrust themselves to his professional care; and, while it is often the duty of the

Medical Examiner to oppose his judgment to the wishes of Agents by refusing to recommend some of the Applicants for Insurance, yet the Medical Examiner, by the exercise of tact and judgment, and especially by firmness in his convictions, ought to avoid all friction, and thereby secure that harmony so essential to a pleasant and profitable intercourse and to satisfactory business results.

To the Agents belongs the task of securing Applicants for Insurance, thus bringing new business to the Company; and to the Medical Examiners that of selecting from such Applicants only those risks which may be safely accepted by the Company.

In ordinary medical practice the patient endeavors to describe fully and clearly the history and every detail of the disease of which he complains, so as to give the physician a complete understanding of his condition. He conceals nothing from him, and the physician has only to consider the evidence before him and, rejecting that which is worthless, to act upon that which is reliable and of value.

In examinations for Life Insurance, on the contrary, the Applicant wishes to appear well and strong. He declares that he is in sound health, and in all his statements as to his personal and family history he is inclined to emphasize only those features which appear to him favorable to his case; and when the Applicant is dishonest, he tries to mislead the Examiner, and so distorts the facts that it becomes very difficult to draw a correct conclusion from them. In short, a Patient assists his physician; an Applicant for Insurance frequently antagonizes the Medical Examiner.

Therefore, besides the skill of the ordinary practitioner, the Examiner for Life Insurance must bring to his task complete independence of character, absolute integrity, and the tact to recognize all attempts at fraud on the part of Applicants or others interested in the risk. He must constantly bear in mind that he is the Guardian of the interests of the Company and that upon his vigilance, judgment and integrity depends, largely, its success or failure.

MEDICAL EXAMINATIONS.

The Medical Examination of an Applicant for Life Insurance has for its object to secure such information in regard to the family history and the past and present health of the Applicant as will enable the Medical Board at the Home Office, assisted by the opinion of the Medical Examiner, to judge whether the Company may safely assume the risk of granting the Insurance applied for. This object is best secured by following a routine which has been found by experience to produce the most satisfactory results. The steps in this routine may be illustrated by describing in detail the method of conducting an examination at the Home Office of the Company.

When an Applicant presents himself for examination, or is brought by an Agent, the Examiner receives him with courtesy, takes him alone into his private office, provides him with a comfortable seat, and begins the examination by reviewing in detail the statements made in the application as to his full name, the date of birth, occupation, etc., and satisfies himself as to the identity of the Applicant and that the application is correctly filled out and properly signed.

Then the questions are asked as to the diseases from which the Applicant has suffered, and the answers are fully and clearly set down.

All obscurities in the history of any illness or disease are carefully investigated until the Examiner is fully satisfied as to their importance and bearing on the probable longevity of the Applicant.

The family history is inquired into, and here the Examiner is most careful to set down fully the age and condition of health of the living, and the age and cause of death of each deceased member of the Applicant's family, especially in the direct line, and having always in view the importance of recognizing any hereditary disease.

This completes the "Declarations made to the Medical Examiner," and the paper is then signed by the Applicant in the presence of the Examiner.

The Examiner then turns to the "Medical Examiner's Report" and sets down the full name, age and occupation of the Applicant, and makes such other of the required memoranda as may be possible without disturbing him. During this time the Applicant has remained quietly seated and, assisted by the tact and courtesy of the Examiner, has overcome that nervousness so natural to any one when subjected to a medical examination.

While the Applicant is thus seated at his ease the Examiner notes the number and character of his respirations, and examines his pulse, observing its rapidity, volume and rhythm, and noting especially the character of the vessels and the condition of their walls.

The Applicant having then removed his coat and vest, the Examiner weighs him, and measures his height and the circumference of his chest and abdomen, and, the clothing having been arranged for that purpose, proceeds to the physical examination of the chest. He notices the size and position of the heart and carefully studies its action and the character of its sounds. He observes the character of the percussion note and of the respiratory sounds over every part of both lungs, and, when he suspects any abnormality, in order to avoid possible error, requests the Applicant, before continuing the examination, to remove such other portions of his clothing as may be necessary.

If the Applicant has given a history of disease of any other organs of the body, the Examiner pursues his investigations until entirely satisfied as to their present condition, and carefully notes whatever changes he may have found.

Having completed the physical examination, he notes any scars or marks which would serve to identify the Applicant, and selects and records the most striking and characteristic of them. At the same time, if there has been any doubt about the successful vaccination of the Applicant, he carefully looks for a scar and satisfies himself on that point.

He now requests the Applicant to furnish him with a specimen of his urine, and takes care that no deception is practiced, and that it is voided by the Applicant himself.

This completes the examination and, while the Applicant is re-adjusting his clothing, the Examiner reviews his report, to be sure that he requires no further information. He then courteously dismisses him, referring to the details and the result of the Examination, or not, as seems, in his judgment, advisable.

Then, having made the necessary examination of the urine, he proceeds, at his leisure, to complete his report. He weighs deliberately all the factors in the case and, having arrived at a conclusion as to the value of the risk, writes down his decision, recommending the Applicant as "First-class," "Good" or "Fair;" or refusing altogether to recommend the risk, as the results of his examination and deliberation require.

FEES FOR MEDICAL EXAMINATIONS.

Immediately upon their appointment, all Medical Examiners are notified by the Company of the fee allowed them, and this fee (whether the applicant is accepted or rejected by the Examiner) is paid by the Company for each examination for new or increased insurance, and an extra fee is allowed whenever a microscopical examination of the urine is required by the rules of the Company. (See rule 9, p. 18).

When the examination is for the reinstatement of a lapsed policy or for a paid-up policy, the fee is not paid by the Company, but by the applicant; and the Company is not responsible for such fee.

Medical Examiners are desired to send their bills monthly direct to the Company, on the blanks provided for that purpose. They must state on such blanks the date of the examination, the name in full of the person examined, and where the examination was made, and payment will be promptly made. The Agents or Managers will furnish the Examiners with blank billheads, or Examiners may obtain them from the Company direct.

To prevent delay and the necessity for correspondence with Examiners, which will inevitably arise if they make mistakes or omit any important details in their examinations, the Medical Department submits the following

RULES FOR CONDUCTING EXAMINATIONS,

which must be carefully observed by the Medical Examiners of the Company:

1. **Promptness** in keeping appointments and in making examinations must be strictly observed by the Examiner.

NOTE.—Competition in this business is so strong that the least delay may cause the loss of a risk to the Company. The Examiner should therefore make the examination and his report at the earliest possible moment.

2. **Privacy.** The examinations must be made in private, and no Agent or any third person allowed to be present.

3. **As to the Application.** Before the medical examination is begun, the Application blank must be completely filled out, all questions answered and signatures affixed; and the Examiner should see that the questions are perfectly understood by the Applicant and the answers fully and truthfully made.

4. **As to the Declarations and Medical Examiner's Report.** In both of these blanks all questions must be fully, clearly and separately answered, though as briefly as possible, and all doubtful points explained.

NOTE.—Where the Applicant is of light or heavy build, according to the standard of the Company as given in the table of Heights and Weights [see page 6], the exact measurements should be given, and the question whether this build is an individual or family trait should be fully answered.

All such points as recent loss of weight, a "pale" complexion, a general appearance only "fair," a "stooping" figure, are explained in a well-reported examination.

5. **Of Personal History.** A positive statement shall be made of each of the diseases from which an Applicant has suffered. All indefinite terms, such as "slight cough," "slight dyspepsia," "bilious headaches at times," etc., must be avoided. If worthy of mention, the disease must be fully described.

NOTE.—The utmost care should be taken to give a complete history of such diseases as Rheumatism, Gout or Syphilis; the date of each attack, the character and severity of its symptoms, its duration and sequelæ, should all be fully set forth. The importance should be kept in mind of distinguishing Chancroid from true Chancre; and, when there is a history of Gonorrhoea, the presence or absence of a stricture of the Urethra should be noted.

Whenever the Examiner is unable to fully satisfy himself as to the influence on the probable longevity of the Applicant of any disease from which he has suffered, the Examiner should request the Applicant to furnish the Company, on a blank provided for that purpose, a "Certificate of the Usual Medical Attendant" as to the disease in question, and, if possible, should attach such Certificate to his report.

6. **Of Family History.** The details of the family history, especially with reference to hereditary diseases, shall be fully set forth.

Such indefinite causes of death as "general debility," "change of life," "dropsy," "fever," "child-birth," "exposure" or "accident" must be avoided or, if given, must be so explained by the Examiner that the existence or non-existence of hereditary disease will be clearly established.

7. **Examination of Women.** In the examination of women, the Medical Examiners must be quite as thorough as in the examination of men, and, in all cases, they must furnish, on the special blank provided by the Company, a separate report on the condition of the Organs of Generation.

NOTE.—The experience of most Life Insurance companies with female risks has been unfavorable, chiefly because of a want of thoroughness in the examinations. The Medical Examiners of this Company should take care to avoid the possibility of such results.

8. **As to the Use of Alcohol.** The past and present habits of the Applicant as to the use or abuse of alcohol must be carefully and explicitly stated.

NOTE.—This is a question of FACT whose importance in Life Insurance cannot be over-estimated. When the Applicant is a stranger, the Examiner, by questioning and cross-questioning, ought to get at the exact truth; and when he is personally known to the Examiner, an incorrect answer is inexcusable. The Company never knowingly accepts risks on the lives of persons not habitually temperate.

9. **A Chemical Examination of Urine** must be made in all cases, and the Examiner must

satisfy himself that no deception is practiced upon him and that the urine is that of the Applicant.

NOTE.—A microscopic examination may be made whenever any feature in the history or examination makes it necessary to the Examiner to enable him to decide the case. For such examination, carefully made and reported, the Company allows the Examiner an additional fee.

Where, by reason of the amount, two Examiners are required to examine a single risk, the specimens of urine used must not be the same, but must have been passed at different hours of the same day or on different days.

10. **As to Corrections.** Whenever the Medical Examiner finds it necessary to make any corrections, interpolations or erasures, in either the "Declarations" or "Report," he must acknowledge each of them by placing opposite it his initials or signature.

11. **The Classification of Risks** by the Examiner must be based as far as possible upon the physical condition of the Applicant at the time of the examination.

NOTE.—Sometimes the Examiner refuses to recommend a risk because of a bad family history or because of objectionable features in the past history of the Applicant, when, according to the experience of the Home Office, such a risk might be safely assumed. The Examiner must remember that the final decision in regard to the acceptance or rejection of risks belongs to the Home Office, and that his recommendation should be such as to give the Company an opportunity to exercise its judgment on the case.

The classification which best meets the wishes of the Home Office is something like "First-class, subject to family history," or "Good, excepting for rheumatism," or "First-class, physically," and so on.

12. **The Decision of the Medical Examiner** should be rendered only after a careful study of all the facts in the case, and, as the Company issues

no form of policy on persons ill with any acute or chronic disease, such as bronchitis, emphysema, heart disease, albuminuria, or the like, he should not recommend such persons for insurance, or should recommend them only for a period safe to the Company, or be governed by Rule 11. Where the Examiner is in doubt, he must give the Company the benefit of such doubt.

NOTE.—Before giving his decision on any case, it is well for the Examiner to ask himself the questions: whether he would, as a private individual, take precisely such a risk upon his own account, and would he, himself, insure the life of the Applicant? and whether he would advise the Company to place hundreds of similar risks upon its books?

13. **The Decisions Need not be Announced.** In any case where the Examiner thinks it necessary or desirable, or whenever his own business or personal relations with the Applicant or Agent are of such a character that he does not wish to express fully in the examination papers his opinion of the risk, (*a*) he may forward all the papers direct to the Home Office instead of through the Agent or Manager; or (*b*) the Company will accept a supplementary report mailed to the Home Office. Such report, however, to be of value, must reach the Home Office BEFORE—CERTAINLY NOT LATER—than the application itself.*

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* See also Special Notice, page 2.

For the convenience of the Medical Examiners of the Company, the following remarks are added in regard to

THE EXAMINATION OF URINE.

As quickly as possible after it is passed, the specimen of urine of the Applicant for Life Insurance should be examined with respect to each of the following points:

1. **Quantity** in 24 hours.
2. **Color.**
3. **Specific Gravity.**
4. **Reaction.**
5. **Transparency.**
6. **Albumen or Sugar.**
7. **Microscopical Appearances of the Sediment.**

1. **The Quantity** of urine passed by an adult in good HEALTH may be stated at about 45 to 50 ounces in 24 hours; but it is subject to variations within considerable limits, depending upon such conditions as the temperature and humidity of the atmosphere, the activity of the skin, the amount of the expiratory exhalations, and the amount of fluids or of liquid foods ingested.

In DISEASE it varies from the enormous quantities passed in diabetes, in hysterical polyuria and in the amyloid and the old granular kidney, to the scanty flow of the febrile state and of some forms of disease of the kidneys.

2. **The Color** is usually a pale yellow or amber, though it varies with the quantity of urine voided. With a copious flow the color is very pale; with a scanty flow it may be very dark.

In DISEASE it varies from the dark, smoky-brown of acute Bright's disease, through the high colored urine of the febrile state, and the pale straw color of diabetic urine to the almost colorless urine of the hysterical state and some cases of contracted kidney.

3. **The Specific Gravity** of urine may be stated at 1,020, under ordinary circumstances, although it may vary in health between 1,010 and 1,025, dependent upon the same causes as those which influence the variation in quantity and in color. Since the amount of solids excreted by the kidneys is fairly constant, this variation in specific gravity is approximately in inverse ratio to the amount of urine voided.

The Specific Gravity is best obtained by means of the URINOMETER. This instrument is usually graduated between 1,000 (the specific gravity of distilled water) and 1,060, and, when used, care has to be taken that it is perfectly clean and that it does not cling to the side of the vessel in which the test is made.

In DISEASE this range is increased. In diabetes it may be 1,040, 1,050 or higher. In the earlier days of acute Bright's disease, and in the febrile state, it is high, and from that it ranges to that of the cirrhotic and the amyloid kidney, of diabetes insipidus or of the hysterical state, where the specific gravity may be 1,005 or less. Since, however, urine with specific gravity 1,010 has been found to contain sugar, and since the normal specific gravity has often been noticed in old cases of Bright's disease and in severe diabetes, the specific gravity cannot be relied on as an accurate guide to disease. But an average daily specific gravity of 1,025 or over is always suggestive of the presence of sugar, and of 1,015 or under of old Bright's disease.

4. **The Reaction** of normal urine is usually acid—due, probably, to acid phosphate of soda—but it may be neutral or alkaline.

The reaction is determined by the use of litmus papers. The red becomes blue in the presence of an alkaline urine, and the blue paper becomes red if the urine is acid. When the reaction is not well marked, both the red and blue papers should be used. The acidity of urine is increased by an albuminous diet, and vegetable foods decrease it or render the urine alkaline.

In DISEASE the acidity is decreased in Anæmia and in some nervous affections, and is increased in diabetes and fevers.

5. **Transparency.** The urine is naturally transparent, but, within the limits of HEALTH, it may be more or less opaque, on account of the presence of

A. Earthy Phosphates,
B. Mixed Urates,
C. Mucus,
D. Bacteria.

A. The EARTHY PHOSPHATES may cause normal urine, at the moment it is voided, to be opaque. Shortly afterwards they subside and form a bulky, flocculent sediment, with clear urine above. They may be recognized by the fact that the application of heat will increase the opacity, while a few drops of Nitric or Acetic Acid will cause it to disappear.

B. The MIXED URATES often render a cold urine turbid. They subside quite rapidly and form a white or pinkish deposit at the bottom and on the sides of the containing vessel, much more dense in character than that of the phosphates. A gentle heat causes this opacity to disappear.

C. MUCUS from the genito-urinary tract may occur in sufficient quantity, within the limits of health, to cause some opacity in the urine. It forms a light, flocculent sediment, much like that produced by the phosphates, but which may be distinguished from the latter by the fact that alkalies, heat and strong acids have no effect upon it, while Acetic Acid increases the opacity by coagulating the mucin.

D. BACTERIA. When a specimen of urine is allowed to stand for some time, especially in hot weather, it becomes opaque on account of beginning decomposition and the development of Bacteria. This change is important because it interferes with the delicacy of the tests for Albumen; and it is on this account that a specimen of urine should be examined while fresh.

When it becomes necessary to examine for Albumen a specimen of turbid urine, which is not rendered transparent by filtration, it should be treated by the method suggested by Hofman & Ultzman, which is as follows: Add to a portion of the urine, in a clean test-tube, about one-quarter its volume of Liquor Potassae, boil the mixture and filter. Should this filtrate be not quite clear, add one or two drops of Magnesian Fluid,* warm again and filter. This filtrate always appears clear and transparent. The presence of Albumen may then be detected by the Nitric Acid test.

In DISEASE, the urine may be opaque on account of the presence of—

a. PUS. This forms a deposit which often resembles that of the urates. It is distinguished from it by the fact that heat increases the opacity of purulent urine, and from phosphatic deposit by the fact that it is not cleared up by the addition of a few drops of acid.

b. DECOMPOSITION, as in old cases of cystitis, in which the urine contains bacteria, pus, mucus, epithelium and, perhaps, shreds of disorganized tissue.

c. FAT, as in chylous urine. Fat is recognized by the well-known power of ether to dissolve it.

6A. **Albumen.** The presence of Albumen in the urine is always suggestive of such grave pathological conditions that its recognition becomes one of the most important features in the examination of urine. Many tests have been brought forward for this purpose, and have had their earnest advocates, but those which have become most generally recognized for simplicity and effectiveness are the Nitric Acid test and the heat test.

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* The formula of the Magnesian Fluid is as follows: Magnesium Sulphate and Ammonium Chloride, of each one drachm; Liquor Ammoniae, one drachm; Distilled Water, one ounce. Mix.

The Nitric Acid Test. Into a clean test-tube about half an inch of pure, colorless Nitric Acid is poured. The test-tube being then held at a considerable angle, a quantity of clear urine is allowed to flow from a pipette slowly down the inclined side of the tube, until an inch of urine overlies the acid. This must be carefully done, so that there shall be no mixture of the acid and the urine. The presence of Albumen is indicated by a sharp, white band or zone of coagulated Albumen in the urine AT the line of contact of the acid with the urine. In order to recognize this band, where the amount of Albumen is small, the tube should be held in a good light against a dark background. Sometimes this zone of coagulated Albumen develops very slowly, and it is, therefore, always well to look at the specimen again 15 minutes after the test is made, having placed it carefully aside for that purpose.

ERRORS. A specimen of urine which contains a large amount of Urates may show a whitish zone above the line of contact. This is caused by the formation of Acid Urates, and is distinguished by the fact that the zone is not so sharply defined as that formed by Albumen, but fades gradually into the clear urine; also, because it disappears on the application of a gentle heat.

The presence of resin, not unusual after the use of such drugs as Balsam of Copaiba, Turpentine, etc., produces a whitish zone similar to that produced by Albumen. The addition of a few drops of Alcohol will redissolve the resin.

The Heat Test for Albumen. A clean test-tube is filled about two-thirds full of slightly acid urine. To the upper part of this urine, heat is applied by means of a spirit-lamp. If, when the urine has boiled, any diminution of transparency is noticed, it is due to Albumen or the Earthy Phosphates. If to the latter, a few drops of Acetic Acid will cause the opacity to disappear; if to Albumen, the addition of the acid will have no effect.

ERROR. If the urine is slightly turbid from decomposition and the presence of Bacteria, any delicate change in its opacity cannot be seen, and it must be filtered before applying the heat.

If, after filtration, it still remain turbid, it should be treated according to the suggestions already made under 5D, Bacteria. If the specimen is alkaline, Acetic Acid should be cautiously used, and if strongly acid, Liquor Potassae may be added, so as to render the urine only slightly acid.

If Albumen is not found in a specimen of urine subjected to both of these tests, it may be safely affirmed that it is not present.

6B. **Sugar.** Although many excellent authorities maintain that the presence of a small quantity of sugar in the urine may be entirely physiological, yet it is so often the first evidence of diabetes that its recognition is of the utmost importance in examinations for Life Insurance.

Of the various tests which have been devised for that purpose, the Copper test—as in the form of Fehling's Solution*—and the Bismuth test, deserve special mention. The composition of Fehling's Solution is based upon the fact, not only that sugar has the property of reducing the Oxide of Copper to a lower state of oxidation, but also that a definite quantity of the former will react upon a known quantity of the latter (1 c. c. of Fehling's Solution is reduced by .005 grams of sugar), and it is equally useful for qualitative and quantitative analysis.

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* Fehling's Solution is made after the following formula: 34.64 grams of c. p. Sulphate of Copper are dissolved in 200 grams of distilled water; 173 grams c.p. Neutral Tartrate of Soda are dissolved in 500 grams of Sodic Hydrate of a sp. gr. 1.12, and to this alkaline solution the copper solution is slowly added. The mixture is then diluted to one liter. The solution is made and sold by all the large drug houses. Perhaps the best preparation is that put up by Dr. E. R. Squibb, of Brooklyn, N. Y., and the Medical Examiners of the Company are requested, whenever possible, to use this preparation.

Whenever it is impossible to obtain a reliable preparation of Fehling's Solution, a fairly good substitute for qualitative work may be made as follows: 1 drachm of Sulphate of Copper, 2 drachms of Neutral Tartrate of Potash, 3 ounces of Liquor Potassae. Mix. Keep this closely corked and in a cool, dark place. It is to be used as detailed above for Fehling's Solution.

It is an alkaline fluid, of transparent, deep blue color, somewhat easily decomposed by exposure to the air and to light and warmth, therefore requiring, for its preservation, to be kept in small, closely-stoppered bottles, in a cool, dark place.

The Test. A small quantity of the solution is poured into a clean test-tube, diluted with two or three times its volume or pure water, and boiled for a few seconds over a spirit-lamp. If the mixture becomes turbid, or a yellow or brick-red precipitate forms, it has probably been kept too long or has been improperly prepared. If, however, the mixture retains its transparent, deep blue color, it may be relied upon, and the test is proceeded with. To the hot mixture the urine is added, drop by drop, and the heat is occasionally applied, until a volume of urine has been added equal to the volume of the mixture. If sugar is present in quantity, the first few drops will usually cause a yellow opacity to appear, which spreads through the mixture, changing slowly to red as it settles to the bottom of the test-tube. A small quantity of sugar causes this reaction to take place more slowly. If no reaction takes place, the urine, clinically speaking, is free from sugar.

ERRORS. *a.* The urine must be fresh. A small quantity of sugar may fail to cause the reaction in an ammoniacal urine.

b. Albumen interferes with the reaction and must be removed before the test is made. This may be done by heating the urine, previously rendered only faintly acid, and filtering it. Care must be taken not to boil the specimen too long.

c. The changes produced by the earthy phosphates must not be confounded with the sugar reaction. The former produce a flocculent precipitation in the midst of a transparent, greenish amber fluid.

The Bismuth Tests are based upon the fact that the action of sugar upon the Bismuth salts is the same as upon the Salts of Copper. They have advantage over the Copper tests of being less sensitive to the decomposing power of other organic compounds.

The Test, which is ordinarily employed (Boettger's), is conducted as follows: the urine is mixed with an equal volume of Liquor Potassae or Sodae, a small quantity of Bismuth Subnitrate is added, and the mixture is boiled for a short time. If sugar is present, insoluble black Oxide of Bismuth is formed and deposited on the sides of the test-tube; or, if the quantity of sugar is small, the white Bismuth powder becomes tinged with gray.

ERRORS. Only a very small quantity of Bismuth should be used, as an excess of Bismuth, if the amount of sugar is small, may conceal the reaction.

If Albumen is present in the urine, a reaction, due to the formation of the black Sulphide of Bismuth, may take place, which resembles that produced by sugar and may be mistaken for it; the Albumen should, therefore, be removed from the urine before the test is made.

Another Test, which is very satisfactory, is that recommended by Nylander, in which Bismuth is used in solution.* The test is conducted as follows: to a small quantity of this solution in a clean test-tube heat is applied, and urine is slowly added until the quantity of urine added is equal to the quantity of the solution used. If sugar is present, the mixture becomes slowly clouded and turns gradually darker until, if sugar is present in considerable quantity, it becomes almost or quite black. When the quantity of sugar is very small, the reaction is much less distinct.

To insure greater certainty in all doubtful cases, *both* the Bismuth and Copper tests should be employed.

7. **Microscopical Examination.** The apparatus necessary for the microscopical examination of the urine are: (1) a conical glass, very broad at the top and very narrow at the bottom, of a capacity of 4 fluid ounces; (2) several cut-glass slides; (3) a few thin cover-glasses; (4) a pipette; (5) a microscope with two objectives, 2-3″ to 1″ and 1-4″ to 1-5″; two eye-pieces and a good concave mirror for illuminating

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*The formula of this solution is as follows: Bismuth Subnitrate [c. p.], 2 grams or 3 s s; Potassii et Sodii Tartrat [c. p.] U, 4 grams or 3 j; Liquor Sodii Hydrat [10% solution in Aq. Dest.], 100 c. c. or 3xxvii. Dissolve by the aid of gentle heat and decant. Use the supernatant fluid.

the field. The urine to be examined is allowed to stand from 6 to 12 hours in a conical glass, carefully covered from the air and dust by means of a piece of glass or card-board. A few drops of sediment are then taken up in the pipette and transferred to a clean slide placed upon the stage of the microscope. With the low power objective, the field is carefully searched for epithelial, blood, or pus-cells, mucus, renal tube-casts or other pathological bodies. Generally, the presence of these may thus be detected. If not, or where the character of the sediment requires further study, one or two drops are taken up in the pipette, transferred to a fresh slide, covered with a clean cover-glass, and with the high power objective and, if necessary, the second eye-piece, the study is continued. These procedures are repeated several times, so that a large amount of sediment may pass through the field of the instrument. An examination thus conducted ought to reveal anything of clinical importance in the sediment.

Whenever there is any special reason to suspect pathological changes in the Genito-urinary Tract, not revealed in the first examination, it is [illegible] make several subsequent examinations at intervals of a few days, but such extended and repeated examinations must not be made at the charge of the Company, except by special direction of the Home Office.

In conclusion, we submit these suggestions for the consideration of the medical gentlemen to whose hands, as its Medical Examiners and as such its confidential advisers, the Company entrusts the grave responsibilities of their position, with the hope and belief that they will sustain in the future, as they have in the past, the honor of their profession, and ably protect the interests of the NEW-YORK LIFE INSURANCE COMPANY.

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A. HUNTINGTON, M. D., } *Directors.*

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